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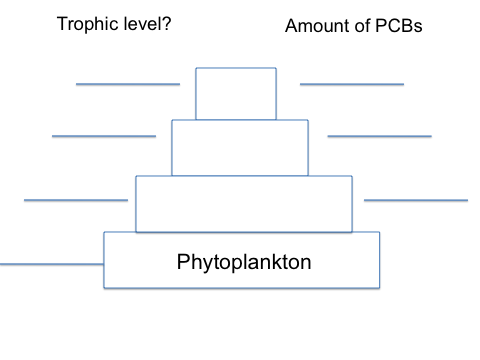
Biological Magnification

**Background:**

Tens of thousands of **chemicals** are used by U.S. industry. These chemicals and any by-products generated through their production can be released to the environment and their presence in the environment may impact wildlife and humans. **Biological magnification** is the process of increasing concentrations of contaminants through the **food chain. Polychlorinated biphenyls (PCBs)** are chemicals that were added to oil in transformers and other electrical equipment to retard fires until their manufacture was stopped in the United States in 1977. PCBs that were disposed of improperly may have contaminated soil and ground and/or surface water. PCBs do not readily break down in the environment and thus remain there for long periods of time. Furthermore, PCBs can travel long distances in the air and be deposited in areas far away from where they were released. In water, PCBs bind strongly to sediments but small amounts may remain dissolved in water. **Exposure** to PCBs results in contamination of the bodies of aquatic organisms and bioaccumulation of PCBs in the fatty tissues of these organisms and any humans who consume these aquatic organisms. Concentrations of PCBs in aquatic organisms may be 2,000 to more than a million times higher than the concentrations found in the surrounding water and sediment, with species at the top of the food chain having the highest PCB concentrations.

Today we will be exploring how PCBs accumulate in the food web. Below is a trophic level diagram. Fill in the diagram by putting each organism in its appropriate trophic level, labeling the trophic levels, and filling in the amount of PCBs in each population at the end of the activity.

* Organisms for today’s activity: Zooplankton, Fish, and Eagle.



How do toxins such as PCBs enter the food chain/web? What sources do they come from?

What happened to PCB levels as you move up the food chain? Which population contained the most PCBs?

What other ways might the accumulation of toxins affect the food chain/web?

Why is this important in terms of biodiversity?

How could this affect humans?

Define Biological Magnification in your own words.